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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,875	06/03/2005	Klaus Peter Schwung	121059	4964
25944 7590 07/22/2010 OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850				
EXAMINER				
SYKES, ALTREV C				
ART UNIT		PAPER NUMBER		
1786				
NOTIFICATION DATE		DELIVERY MODE		
07/22/2010		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction25944@oliff.com
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Office Action Summary

Application No.

10/509,875

Applicant(s)

SCHWUNG ET AL.

Examiner

ALTREV C. SYKES

Art Unit

1786

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 6-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 12-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/22)
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 4, 2010 has been entered.

Response to Arguments

2. Applicant's arguments, filed May 4, 2010, with respect to the rejection(s) of claim(s) 1-5 and 12-17 under 35 U.S.C. 103 (a) over Shue et al. and Harris have been fully considered and are persuasive. Both references teach an order of magnitude larger than the claimed range of applicant and therefore would not render the claimed range obvious. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art.
3. Applicant states in the remarks that Examples 1 and 2, and the table at page 10 of Applicants' specification as filed teaches that there is a maximum PPS content at which ILSS and BS are optimized. Above this maximum PPS content (i.e. 0.006 wt%), a decrease in the ILSS occurs. Thus, the claimed content of PPS relative to reinforcing fibers is critical and produces unexpected results attributed to the content range recited.

Examiner is not persuaded. Examiner notes the comparative example does not have PPS. Therefore, applicant has not shown the criticality of the upper limit of the claimed range.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
 1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
6. Claims 1-5 and 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura et al. (US 5,641,572) in view of Morgan Tutorial.

Regarding claims 1 and 13, the applicant claims fibers wherein "a proportion of polyphenylene sulfide relative to the reinforcing fibers is 0.001 to < 0.01 percent by weight". Yoshimura et al. describes reinforcing fibers made from short carbon fibers

that contain, for example, polyphenylene sulfide (PPS), as a sizing agent (See Col 3, line 42) Yoshimura et al. further teaches the deposit amount of the sizing agent is not specifically defined as far as it is sufficient to allow the agent to exhibit its desired sizing effect. The sizing agent in a short carbon fiber bundling may be in the range of 0.01 to 10% by weight. (See Col 3, lines 49-60). Yoshimura et al. teaches that less than 0.01% by weight is undesirable, because its sizing effect on short carbon bundles becomes unsatisfactory, (Col 3, line 62-64) Yoshimura et al. teaches when the deposit amount exceeds 10% the sizing effect becomes too high and reduces dispersibility. Examiner notes that the effect of the amount of sizing agent is well understood to relate to the sizing effect observed. The range taught by the prior art is not the same as the claimed range; however, the range of the prior art does touch that of the upper end of applicants' claimed range.

The claimed invention is obvious over the prior art for the following reasons:

RESULT EFFECTIVE VARIABLE

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used slightly less than 0.01% polyphenylene sulfide as the sizing agent in Yoshimura as the amount of sizing is directly related to amount of size realized on the fiber.

TOUCHING RANGES

A) It is held that a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have

expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775,227 USPQ 773 (Fed. Cir. 1985) (Court held as proper a rejection of a claim directed to an alloy of "having 0.8% nickel, 0.3% molybdenum, up to 0.1% iron, balance titanium" as obvious over a reference disclosing alloys of 0.75% nickel, 0.25% molybdenum, balance titanium and 0.94% nickel, 0.31% molybdenum, balance titanium.). In this particular case, applicant claims sizing agent amount of *less than* 0.01 percent by weight. Yoshimura et al. teaches a sizing agent amount of 0.01 percent by weight. Therefore, one would expect for the amount of PPS sizing agent as taught by Yoshimura et al. to provide the same properties as exhibited by the PPS as claimed by applicant.

B) A measured value (such as "weight") has two components to the number presented: Accuracy and Precision.

Measurements are approximations and no measuring device can give perfect measurements without experimental uncertainty. (See Morgan Tutorial).

Therefore, the different instruments will give slightly different values which relates to the accuracy thereof.

Moreover, the number of significant figures reported (only 1 in this instance) contributes to the precision of the value. The examiner notes that a value of 0.0099999% (which is less than 0.01%), would be reported to one significant figure as claimed or reported in the prior art. It would be scientifically irresponsible to treat these measured values as absolutes. As such, the value for the amount of the sizing agent of Yoshimura et al. is

noted to be simply an approximation and does not account for the experimental uncertainty.

Additionally, examiner notes that the provided values of Yoshimura are deemed to have been subjected to at least *some* rounding before being utilized as end points for the amount of sizing agent recorded in the reference and thus a value of less than 0.01 is obvious over a range that ends at 0.01.

USE OF BLENDS

The examiner notes that Yoshimura et al. teaches that several different resins may be used (See Col 3, lines 36-48) including polyphenylene sulfite (sulfide). Since each of these materials function as a sizing agent on their own one would expect that blends of them would function in the same capacity. Furthermore, example 1 uses a blend of two different epoxy materials. A sizing blend comprising 50% polyphenylene sulfide would give a weight range of 0.05 to 5% polyphenylene sulfide. The examiner notes that the claim does not preclude additional sizing components other than polyphenylene sulfide.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have use mixtures of different sizing agents for the sizing agents in Yoshimura et al. as one would expect the blend of two different sizing agents to provide the same function as the individual parts.

Regarding claims 2 and 14, examiner maintains the position as set forth above and notes that a PPS amount of 0.009 wt% would have been prima facie obvious in view of the range as taught by Yoshimura when the experimental uncertainty and the understood effect of the sizing are taken into account. The burden is upon the Applicant to demonstrate that the claimed PPS range is critical and has unexpected results. In the present invention, one would have been motivated to optimize the PPS range in order to tailor the sizing effect. (See Col 3, lines 49-51)

Further, examiner notes that while applicant has shown in the provided examples of the specification the *slightly* increased values for interlaminar shear strength and bending strength with respect to a composite comprising *no* PPS and composites comprising PPS in the amount of 0.006 and 0.009 wt%, there is no indication that the obtained values are ideal or accepted as maximums commercially. In other words, applicant has not set forth that the values taught by the prior art fail to provide sufficient ILSS and BS since there are no examples discussing such or that the values obtained are necessary and/or wanted for commercial application of the composite material.

Regarding claims 3, 4, and 15 Yoshimura et al. discloses various kinds of sizing agents can be used. (See Col 3, lines 35-48) Yoshimura et al. discloses the sized short carbon fibers may be used as a reinforcing material in thermoplastic resins such as polyetheretherketone, polyphenylenesulfide, polyolefins, and mixtures thereof. (See Col 5, lines 34-54)

Regarding claims 5 and 16, Yoshimura et al. discloses the reinforcing fibers are carbon fibers of pitch, polyacrylonitrile or rayon. (See Col 4, lines 42-45)

Regarding claim 12, Yoshimura et al. discloses a resin highly improved in heat resistance, so-called super-engineering plastics is developed and it is expected that a new type of carbon fiber-reinforced resin composed of such new resin and carbon fiber is used in a new and wide scope field as a metal substitute under high temperatures. (See Col 1, lines 17-27) Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the Yoshimura et al. composite material in a component as claimed by applicant since the reference teaches that the material would be suitable for most applications which previously used metal fibers to reinforce super-engineering plastics.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Application/Control Number: 10/509,875
Art Unit: 1786

Page 9

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALTREV C. SYKES whose telephone number is (571)270-3162. The examiner can normally be reached on Monday-Thursday, 8AM-5PM EST, alt Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ACS/
Examiner
7/12/10

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit
1786